

JP11216729

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METHOD AND APPARATUS FOR ELECTROMAGNETIC INDUCTION HEATING OF LAMINATE

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Application

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(s):

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EC Classification:

Equivalents: JP2965948B2

Abstract

PROBLEM TO BE SOLVED: To improve production efficiency by shortening the time for finishing the vulcanization of a laminate remarkably and to improve a product as a whole by reducing the temperature difference between the outside and inside of the laminate during heating and making the quality uniform.

SOLUTION: In a cylindrical laminate A, circular thin steel plates and unvulcanized rubber layers are laminated alternately, and the unvulcanized rubber layers are heated by a method in which a line of magnetic force generated by passing an alternating current through an electromagnetic induction coil 3 arranged around the laminate A is passed perpendicularly through the steel plates of the laminate A to make an eddy current flow in the steel plates to heat them. To the upper and lower ends of the laminate A in the coil 3, a magnetic flux collecting magnetic lid body 54 in which a magnetic disk body in which a notch of a prescribed width in the radial direction is formed from its center to the circumference in a part of in the circumferential direction is fitted integrally to the outer surface of a column onto which a belt-shaped, thin silicon steel plate of a constant height is wound whirlingly without leaving clearances is installed respectively.

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【図8】本発明の第5実施例に係る電磁誘導加熱装置を示す正面視断面図である。

【図9】図9(a)は実験に用いた加熱装置と積層体の寸法を示す正面視断面、図9(b)・図9(c)は本発明の第1実施例の加熱装置1₁と第2実施例の加熱装置1₂の実験例をそれぞれ示す正面視断面である。

【図10】図10(d)～(f)は本発明の第3実施例の加熱装置1₃～第5実施例の加熱装置1₅の実験例をそれぞれ示す正面視断面である。

【図11】本発明の電磁誘導加熱装置の全く別の実施例を概略的に示す正面視断面図である。

【図12】外径1000mm・高さ375mmの積層体の場合に置ける本発明による予熱時・加硫時の最高温度と最低温度を示す温度線図と、従来の蒸気による加硫時の最高温度と最低温度を示す温度線図である。

【符号の説明】

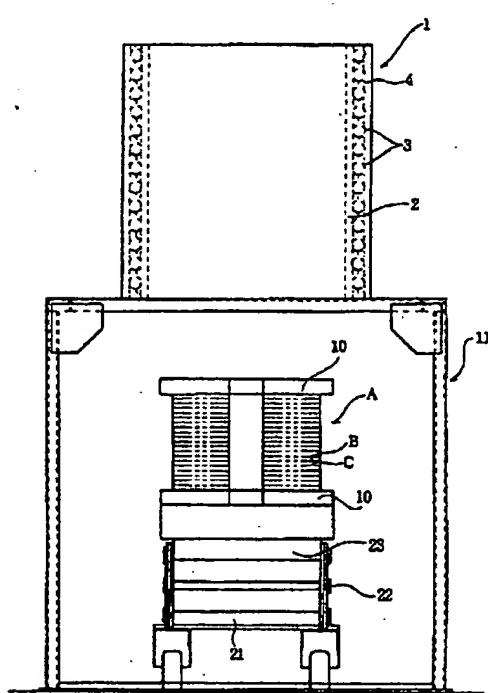
1・1₁・1₂・1₃・1₄・1₅・1' 電磁誘導加熱装置

2・4 円筒状ケース

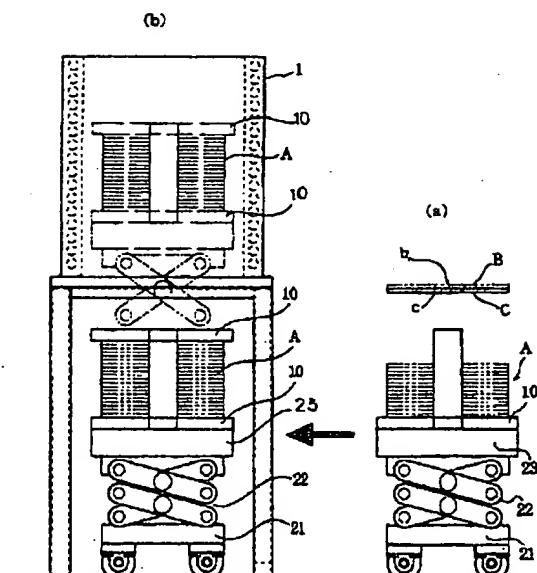
3 電磁誘導用コイル

- 5₁ 円盤体
- 5₂ 円柱体
- 5₃～5₅ 蓋体
- 6 ケイ素鋼板(薄板)
- 11 棒状架台
- 15 側金型
- 16 上部金型
- 17 下部金型
- 18 下熱盤
- 19 上熱盤
- 21 台車
- 22 升降機構
- 23 載置台
- 31 中芯
- A 積層体
- B 未加硫ゴム層
- C 鋼板
- F・F' フランジ

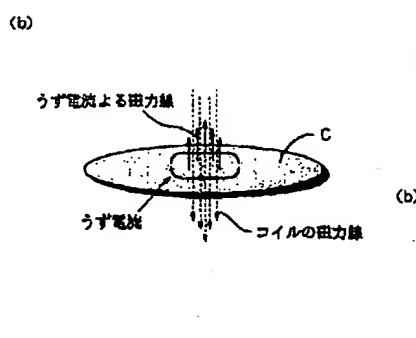
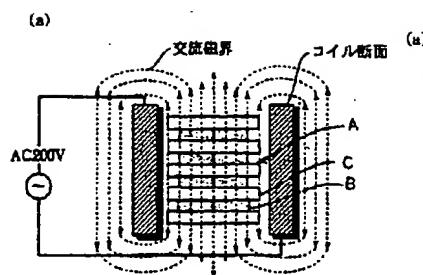
【図1】



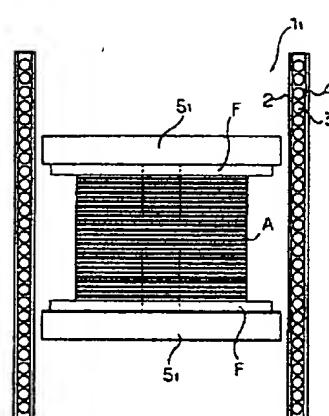
【図2】



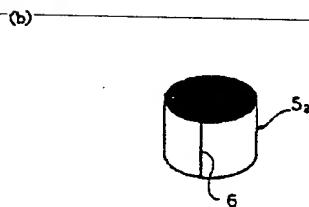
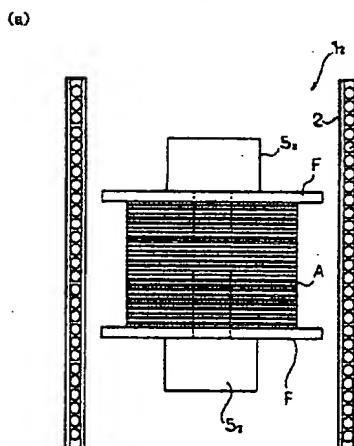
【図3】



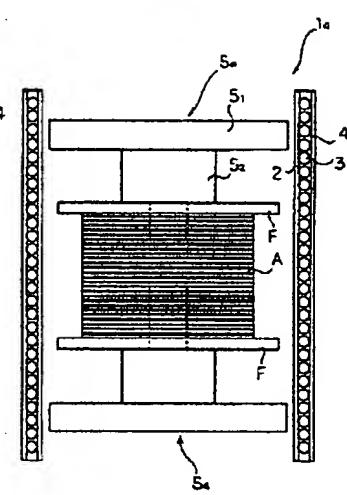
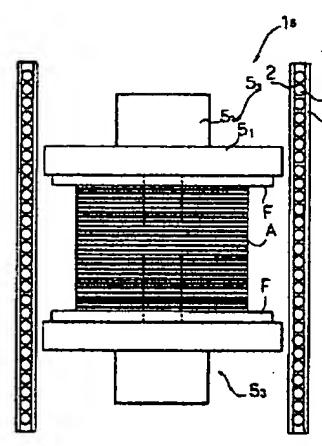
【図4】



【図5】

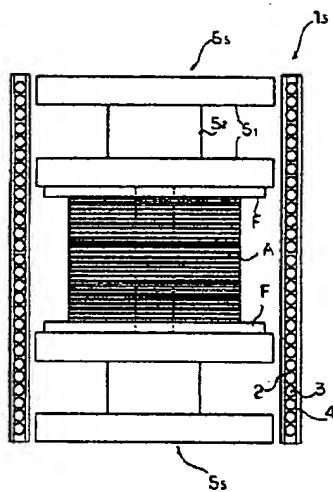


【図6】

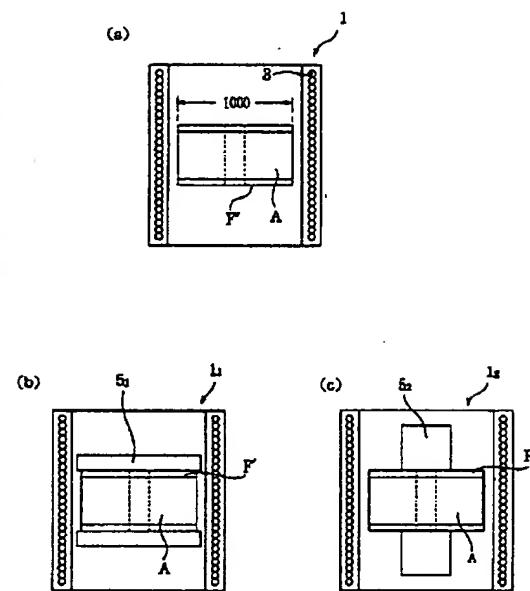


【図7】

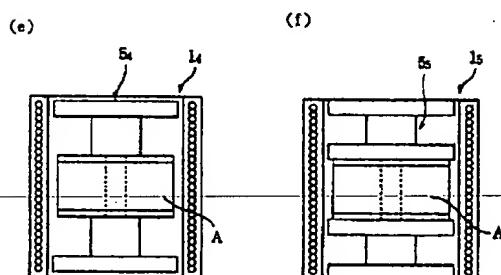
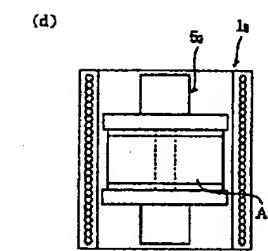
【図8】



【図9】



【図10】



【図11】

